

ABSTRACT

Methods and devices are disclosed for identifying objects over a surface and for tracking the position of said objects in relation to the sensing surface. The methods include the steps of providing an array 5 of electrodes or coils that generating electromagnetic radiation having a individual characteristic frequencies of oscillation. Objects in proximity to the sensing surface(s) couple electromagnetically to the array of electrodes or coils, which then alters the characteristic frequency of one or more elements in the array. By monitoring the 10 individual frequency shifts among the array elements, one or more objects in proximity to the surface can be sensed and identified.

Quantitative identification and enhanced detection of the objects is achieved through the use of electromagnetic markers affixed or embedded in the objects in specified geometric patterns. In addition, 15 a method is presented for scanning the sensing array, through the use of a second layer of electrodes that selectively mask or modulate the sensing field.